

Claims

1. A method of preparing a membrane having an affinity for biomolecules comprising the steps:

- (a) providing a microporous membrane;
- (b) reacting said membrane of step (a) with a reagent containing a functional group to form a functionalized membrane containing reactive functional groups on the surfaces thereof;
- (c) contacting said functionalized membrane of step (b) with a solution containing an affinity ligand to couple said ligand to said functional group to form a biologically active membrane;
- (d) washing said biologically active membrane with a washing solution containing a volatile organic compound that is miscible with said washing solution; and
- (e) drying said biologically active membrane.

2. The method of claim 1 wherein said functional group of step (b) is an aldehyde.

3. The method of claim 1 wherein said affinity ligand of step (c) is selected

from the group consisting of thiophiles; hydrophobes; reversed phase ligands; dyes; low molecular weight charged or non-charged organic molecules; amino acids and analogs thereof; coenzymes, cofactors and analogs thereof; substrates and analogs thereof; endocrine and exocrine substances; enzyme substrates, enzyme inhibitors and analogs thereof; fatty acids, fatty acid derivatives, conjugated fatty acids and analogs thereof; nucleic acids; monomers and analogs and derivatives thereof; polymers and oligopolymers and analogs and derivatives thereof; high molecular weight carbohydrates; glycolic conjugates; proteins and oligomers, subunits and parts thereof; peptides, polypeptides and analogs and derivatives thereof; lectine; antibodies and parts thereof; fusion proteins; haptens; enzymes and subunits and parts thereof; structural proteins; receptors and parts thereof; xenobiotics; pharmaceuticals and pharmaceutically active substances; alkaloids; antibiotics; and biomimmicking substances.

4. The method of claim 3 wherein said affinity ligand is Protein A.

5. The method of claim 1 wherein said washing solution of step (d) is aqueous-based.

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6. The method of claim 5 wherein said washing solution is a phosphate buffered saline solution.

10 7. The method of claim 6 wherein said volatile organic compound of step (c) is glycerine.

8. The method of claim 1 wherein step (c) is conducted at ambient temperature.

15 9. The method of claim 1 wherein said microporous membrane of step (a) is a polymeric membrane selected from the group consisting of cellulose acetate, cellulose nitrate, polyamide, polyethersulfone, polypropylene and polyvinylidene fluoride.

20 10. The method of claim 9 wherein said microporous membrane has an average pore diameter of from about 0.01 to about 15 microns and a thickness of from about 100 to about 500 microns.

11. The membrane product of the method of any of claims 1-4.

25 12. The membrane product of claim 11 stored in a dry state in a substantially anaerobic atmosphere.

30 13. At least one of the membrane product of claim 11 in a filtration housing having a fluid inlet and a fluid outlet wherein said at least one membrane product is situated between said inlet and said outlet.

14. The membrane product of claim 13 wherein said filtration housing contains three of said membrane products.